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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/520,141

09/01/2005

Shigehiro Nishino

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EXAMINER

SONG, MATTHEW J

ART UNIT

PAPER NUMBER

1792

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/520,141	<b>Applicant(s)</b> NISHINO ET AL.	
	<b>Examiner</b> MATTHEW J. SONG	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/26/2008 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 5, recites “planarly placing a small diameter a-SiC single crystal wafer previously formed as a wafer on a graphite plate and simultaneously masking a surface of a substrate” in lines 2-4. There is no support in the original disclosure for “simultaneously masking the surface.” The original disclosure at most supports SiC placement then masking, not simultaneously placing and masking.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Tanino et al (US 6,053,973).

Tanino et al discloses a single crystal SiC **5** and a film of polycrystal SiC **2e** formed in a flat plate shape around an outer circumference of a small diameter  $\alpha$ -SiC single crystal wafer **5** (Fig 4 and col 3, ln 5-67). Tanino et al teaches a polycrystalline film is recrystallized to grow single crystal SiC in an entire region other than the end pieces **2e** (col 3, ln 40-65), this reads on a top and bottom surface of the single crystal wafer is free of polycrystal SiC.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanino et al (US 6,053,973) as applied to claim 1 above, and further in view of Kordina et al (US 5,674,320).

Tanino et al teach all of the limitations of claim 2, as discussed previously, except at least two or more wafers are placed on a graphite plate.

In an apparatus for growing SiC, note entire reference, Kordina et al teaches the susceptor walls are made of graphite and channels are adapted to receive substrate on which SiC will be formed (col 8, ln 30-60), this clearly suggests applicant's graphite plate on which wafers are placed. Kordina et al also teaches more than one substrate may be placed in the same channel (col 7, ln 20-40), this clearly suggests applicant's at least two wafers on a graphite plate.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Tanino et al by using the apparatus for SiC deposition taught by Kordina et al comprising a graphite susceptor for growth on more than one substrate because the apparatus can be used to SiC productively in a commercially competitive way (col 2, ln 15-67). Also, the use of a known apparatus for SiC growth would have been obvious to a person of ordinary skilled at the time of the invention.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanino et al (US 6,053,973) as applied to claim 1 above, and further in view of Tanino (US 6,153,165).

Tanino et al teach all of the limitations of claim 3, as discussed previously, except polycrystal SiC is a  $\beta$ -SiC manufacture by a CVD method.

Tanino (US 6,153,165) teaches growing polycrystalline  $\beta$ -SiC **2** on an  $\alpha$ -SiC single crystal **1** by thermal CVD (col 3, ln 1-35). Tanino also teaches growth of the polycrystalline  $\beta$ -SiC **2** on the side of the  $\alpha$ -SiC single crystal (Fig 1), this clearly suggests applicant's planarly forming a film polycrystalline SiC in a flat shape around an outer circumference of a small diameter single crystal  $\alpha$ -SiC wafer because the SiC layer **2** extends beyond the outer circumference of wafer **1** and the film is planarly flat in Fig 1. Tanino also teaches  $\alpha$  or  $\beta$  SiC plate may be used to obtain a single crystal SiC of high quality (col 3, ln 30-50), this clearly suggests  $\alpha$  and  $\beta$  SiC are equivalent.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Tanino et al by using polycrystalline  $\beta$ -SiC, as taught by Tanino ('165) because substitution of known equivalents for the same purpose is prima facie obvious (MPEP 2144.06).

Referring to claim 3, The patentability determination of a product-by-process claim is based on the patentability of the product and does not depend on its method of production (MPEP 2113). The combination of Tanino et al and Tanino discloses polycrystalline  $\beta$ -SiC. Furthermore, the combination of Tanino et al and Tanino discloses growth by thermal CVD

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1-3 have been considered but are moot in view of the new ground(s) of rejection.

10. Applicant's arguments filed 2/26/2008 have been fully considered but they are not persuasive.

Applicant's argument regarding claim 5 is noted but not found persuasive. The 112 first paragraph rejection for "simultaneously" masking is maintained because the limitation was not removed from the claim, as alleged in the remarks.

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. SONG whose telephone number is (571)272-1468. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on 571-272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Matthew J Song  
Examiner  
Art Unit 1792

MJS  
June 8, 2008

/Robert M Kunemund/

Primary Examiner, Art Unit 1792